

U.S. Patent Application Serial No. 10/523,519
Amendment filed February 13, 2007
Reply to OA dated November 14, 2006

REMARKS

The applicants respectfully submit that new matter has been added. It is believed that this Amendment is fully responsive to the Office Action dated **November 14, 2006**.

Claim Rejections under 35 USC §103(a)

Claims 1 and 2 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of Tsutsui et al. (U.S. 5,808,983).

The present invention is a disk playback device. The disk playback device has a spindle motor (2) for rotating a magneto-optical disk (1), a magnetic head (3) and an optical head (5) provided above and below the disk (1). A magnetic head drive circuit (4) is connected to the magnetic head (3) while a laser drive circuit (6) is connected to the optical head (5). Connected to the magnetic head drive circuit (4) and the laser drive circuit (6) is a control circuit (7). Further, an output signal from the optical head (5) is fed to the control circuit (7). A servo circuit (9) is connected to the spindle motor (2) and the optical head (5). A focus error (FE) signal and a tracking error (TE) signal are obtained from the optical head (5) and are fed to a servo circuit (9) from the control circuit (7). Further, a temperature sensor (8) for measuring the temperature of the disk (1) is connected to the control circuit (7). Based on temperature data, an offset adjustment procedure is executed in which optimum offset values respectively for the FE signal and the TE signal are determined. The FE signal and the TE signal given the offset adjustment are input to the servo circuit (9), and are fed to a focus servo and a tracking servo.

U.S. Patent Application Serial No. 10/523,519

Amendment filed February 13, 2007

Reply to OA dated November 14, 2006

The adjustment procedure used by the control circuit (7) determines an optimum value of offset for the FE signal based on amplitude values of the TE signal or an RF signal fed from the optical head (5) and makes an offset adjustment with reference to an optimum value. The control circuit (7) approximates the relationship between offset values and the amplitude values to a quadratic curve with reference to three different offset values and three amplitudes at the respective offset values. The control circuit (7) then repeats the calculation of an optimum offset value corresponding to the peak of the quadratic curve, and sets the three different offset values respectively at an optimum value obtained in the previous optimum offset value calculation processing.

The AAPA described on pages 1-13 of the specification describes a disk recording and playback device. When disk recording-playback device is in operation a focus servo or tracking servo is actuated for the actuator incorporated in the optical head, based on focus error (FE) signals and tracking error (TE) signals. When the device is initiated into operation, an offset adjustment is made for focusing or tracking based on a TE signal and RF signal. However, a problem exists in the offset adjustment procedure. The relationship between the offset values and the amplitude values is approximated to a quadratic curve with reference to the previous optimum offset value P_{opt1} , and the second and third offset values P_1' , P_4' each having an amplitude value smaller than the amplitude value T_{opt1} at the offset value P_{opt1} by a predetermined value or more, as shown in FIG. 20. In order to obtain the second and third offset values P_1' , P_4' , amplitude values of at least five different offset

U.S. Patent Application Serial No. 10/523,519
Amendment filed February 13, 2007
Reply to OA dated November 14, 2006

values P_{opt1} and P_1' to P_4' need be measured, requiring a long period of time for determining the quadratic curve. Therefore, a long period of time is needed to calculate the optimum offset value.

Tsutsui et al. describes a recording apparatus, such as a disk drive, in which the amplitude value of the tracking error signal is sampled at three different points.

Since Tsutsui et al. describes measuring the amplitude values at three different points we must recommend further amending claim 1. However, the primary difference between the present invention and AAPA and Tsutsui et al. is that AAPA requires the sampling of amplitude values of at least five different offset values P_{opt1} and P_1' to P_4' to determine the second and third offset values, requiring a long period of time for determining the quadratic curve. The AAPA indicates that this is a critical advantage of the present invention and Tsutsui et al. is silent regarding how the second and third offset values are determined. Therefore, this feature has been incorporated into claim 1.

Therefore, independent claim 1 patentably distinguishes over the prior art of record, by reciting,

“A disk playback device comprising a calculation processing circuit for determining an optimum value of offset for an error signal based on an amplitude value of the error signal in accordance with focus deviation or tracking deviation of an optical head or an amplitude value of an output signal of the optical head, and making an offset adjustment based on the optimum offset value, the calculation processing circuit approximating to a quadratic curve the relationship between offset values and the amplitude values in signal reproduction, and repeating calculation of the optimum offset values based on the quadratic curve, and comprising: calculation processing means for approximating to a quadratic curve the relationship between the offset values and the amplitude values with reference to three different offset values and three amplitude values at the respective offset values, and calculating an offset value corresponding to the peak of the quadratic curve as the optimum offset value, and value setting means for setting the three different offset values: a first offset

U.S. Patent Application Serial No. 10/523,519
Amendment filed February 13, 2007
Reply to OA dated November 14, 2006

value; a second offset value smaller than the first offset value and having an amplitude value smaller than an amplitude value at the first offset value by a predetermined value or more; a third offset value greater than the first offset value and having an amplitude value smaller than an amplitude value at the first offset value by a predetermined value or more, and setting the three amplitude values respectively at three amplitude values at the first to third offset values, the value setting means setting the first offset value at an optimum offset value obtained in a previous optimum offset value calculation processing, and setting the second and third offset values respectively at second and third offset values set in a previous optimum offset value calculation processing, wherein a maximum of three amplitude values of a maximum of three different offset values need to be measured to determine the optimum offset value and the determination of said second and said third offset values does not require the determination of amplitude values of at least five different offset values.” (Emphasis Added)

Therefore, withdrawal of the rejection of claims 1 and 2 under 35 U.S.C. §103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of Tsutsui et al. (U.S. 5,808,983) is respectfully requested.

Claim 3 stands rejected under 35 U.S.C. §103(a) as being unpatentable over AAPA in view of Tsutsui et al. as applied to claim 1 above, and further in view of Asano et al. (U.S. Publication No. 2004/00227947).

Asano et al. describes a disk playback unit having a calculation processing means for determining an optimum value of offset for the error signal when the variation of the detected temperature is in excess of a predetermined threshold value.

Claim 3 is allowable by virtue of its dependence from an allowable independent claim. Therefore, withdrawal of the rejection of claim 3 under 35 U.S.C. §103(a) as being unpatentable over

U.S. Patent Application Serial No. **10/523,519**
Amendment filed February 13, 2007
Reply to OA dated November 14, 2006

AAPA in view of Tsutsui et al. and further in view of Asano et al. (U.S. Publication No. 2004/00227947).

U.S. Patent Application Serial No. 10/523,519
Amendment filed February 13, 2007
Reply to OA dated November 14, 2006

Conclusion

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact the applicants undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, the applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, KRATZ, QUINTOS,
HANSON & BROOKS, LLP



George N. Stevens
Attorney for Applicant
Reg. No. 36,938

GNS/jls
Atty. Docket No. 050066
Suite 1000
1725 K Street, N.W.
Washington, D.C. 20006
(202) 659-2930



23850

PATENT TRADEMARK OFFICE